

# Erik J Schlicht, PhD



## About

Erik J Schlicht, PhD, utilizes quantitative methods to predict human performance under uncertainty and risk. He leverages techniques from AI, machine learning and cognitive science to solve real-world problems.

He conducted research at Harvard University, MIT, Caltech and the University of Minnesota; his research has also been covered by several media outlets.

This expertise has been used to innovate across many different data-driven domains; a summary of his experience is contained here.



BrainCallus  
Gaming Proj  
2020



C2-g  
2016-2019



UMN  
2015-2016



Medtronic  
2014-2015



MIT LL  
2011-2014



Aptima  
2010-2011



Harvard & Caltech  
2007-2010

## Experience

### Founder | BrainCallus Gaming Project

Current

Dr. Schlicht is currently working as the Founder of the BrainCallus Gaming Project and is responsible for all technical and business aspects of the company. The BrainCallus Gaming Project is a volunteer-based effort seeking to improve psychiatric decision-making by leveraging a combination of computational gaming, machine learning and cognitive science.

### Founder | Computational Cognition Group, LLC

2016 - 2019

Dr. Schlicht was the Founder of the Computational Cognition Group (C2-g), LLC and was responsible for all technical and business aspects of the company. During his tenure as founder, he gained attention for leveraging multifidelity methods and computational gaming to design decision-support systems. He also developed a novel model to improve the prediction of NFL outcomes by exploiting oddsmaker decision biases.

### Researcher | University of Minnesota, Minneapolis, MN

2015 - 2016

Dr. Schlicht returned to the University of Minnesota to conduct research in the HumanFIRST Lab where he developed machine learning algorithms (e.g., Bayesian Networks, Support Vector Machine regression, Binary classification with Lasso) to predict human driving behavior. These models were then used to estimate the risk associated with candidate transportation technology by using the predictive models in multifidelity simulations, and resulted in invited research talks at SAMSI and Stanford University.

### Human Factors Engineer | Medtronic, Fridley, MN

2014 - 2015

At Medtronic, Dr. Schlicht was part of a team that was responsible for developing next-generation Deep-Brain-Stimulation devices to help treat diseases, such as movement disorders.

### Research Staff | MIT Lincoln Laboratory, Lexington, MA

2011 - 2014

Dr. Schlicht was a researcher at MIT Lincoln Laboratory conducting research related to national security. He was responsible for developing a novel model to predict the decisions of interacting humans. The model defined a quantitative method to combine the results from low-fidelity simulations (e.g., novice in an online simulator) with high-fidelity simulations (e.g., expert in an immersive simulator) to evaluate when inexpensive low-fidelity data can be used to as a proxy for expensive high-fidelity simulations. Moreover, he was part of an effort to use Serious Games as a means to develop quantitative models of operational decision-making.

### Cognitive Scientist | Aptima, Woburn, MA

2010 - 2011

Dr. Schlicht was a Cognitive Scientist at Aptima and led several SBIR and STTR efforts on projects related to national security. In his brief time at Aptima, he was awarded one OSD contract for a biologically-inspired approach to automated scene estimation (BIS-E), in addition to successfully securing one patent for quantifying human reactions to communications.

### Postdoctoral Assc | Harvard University & Caltech

2007 - 2010

While a postdoctoral researcher between Harvard University and Caltech, Dr. Schlicht developed a novel method to quantitatively investigate human decision-making in a competitive (zero-sum) task. This research received an enormous amount of public interest and has been covered by several major media outlets (see list below), and resulted in a publication that ranks in the top 5% of all research output, according to metrics by Altmetric.

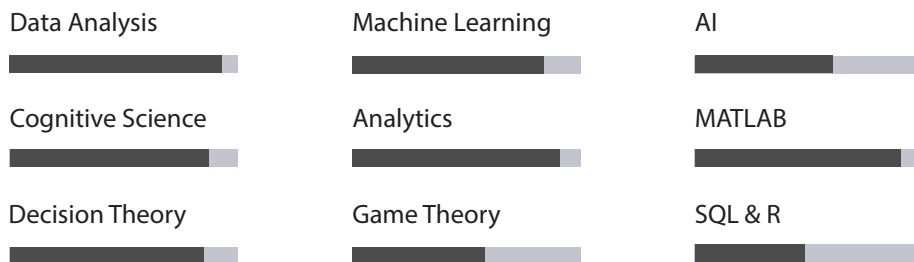
### Course Instructor

Various Dates

Harvard University, Wellesley College, University of Minnesota

Dr. Schlicht has instructed several undergraduate courses at the University of Minnesota, Wellesley College, and Harvard University. In 2009, he was awarded the Certificate of Teaching Distinction from Harvard University.

## Skills



## Education

[University of Minnesota](#) 2000–2007  
PhD, Cognitive & Brain Sciences, Minor Human Factors

Doctoral Thesis: Statistical decision-theory for human perception-action cycles

[Minnesota State University, Mankato](#) 1994–1998  
BS, Psychology, Minor Biology

## Publications

[Schlicht, E.J.](#) (2017). Exploiting oddsmaker bias to improve the prediction of NFL outcomes. arXiv: Statistical Applications

[Schlicht, E.J.](#) & Morris, N. (2017). Estimating the risk associated with candidate transportation technology through multifidelity simulation. arXiv: Statistical Applications

[Schlicht, E.J.](#) & Morris, N. (2015). Risk evaluation of in-vehicle sign information. MnDOT Technical Report Number 2016-18.

[Schlicht, E.J.](#), Lee, R., Wolpert, D., Kochenderfer, M., & Tracey, B. (2012). Predicting the behavior of interacting humans by fusing data from multiple sources. In the Proceedings of the Twenty-Eighth Conference of Uncertainty in Artificial Intelligence, (UAI-2012). [30% Acceptance rate]

[Schlicht, E.J.](#), Shimojo, S., Camerer, C., Battaglia, P.R., & Nakayama, K. (2010). Human wagering behavior depends on opponents faces, PLoS ONE, 5(7):e11663. doi:10.1371/journal.pone.0011663. [Top 5% paper across all research output, according to Altmetric]

[Schlicht, E.J.](#), & Schrater, P.R. (2007). Impact of coordinate transformation uncertainty on human sensorimotor control. Journal of Neurophysiology, 97(6), pp. 4203-14.

[Schlicht, E.J.](#), & Schrater, P.R. (2007). Effects of visual uncertainty on grasping movements. Experimental Brain Research, 182(1), 47-57.

[Schlicht, E.J.](#) (2007). Statistical decision-theory for human perception-action cycles, Doctoral Thesis, University of Minnesota.

Stankiewicz, B.J., Legge, G.E., Mansfield, J.S., & [Schlicht, E.J.](#) (2006). Lost in virtual space: Studies in human and ideal spatial navigation. Journal of Experimental Psychology: Human Perception and Performance, 32, 688-704.

Schrater, P.R., & [Schlicht, E.J.](#) (2006). Internal models for object manipulation: Determining optimal contact locations, Technical Report TR 06-003, University of Minnesota.

## Awards

US Patent #8407026	2013
Systems and methods for quantifying reactions to communications	
ONR Grant (OSD10-L04)	2011
BIS-E Biologically Inspired Scene Estimation - \$100,000	
Certificate of Teaching Distinction	2009
Harvard University	

# Invited Talks

Stanford University, Palo Alto, CA Intelligent Systems Laboratory	2017
SAMSI, Durham, NC Summer Program on Transportation Statistics	2017
MIT, Cambridge, MA Prelec Neuroeconomic Group	2010
MIT, Cambridge, MA Computational and Cognitive Sciences Group	2009
Harvard Medical School, Cambridge, MA Wolfe Laboratory	2009
Caltech, Pasadena, CA Shimojo and Andersen Laboratories	2007
MIT, Cambridge, MA Perceptual Sciences Group	2006
Harvard University, Cambridge, MA Vision Sciences Colloquium	2005
Institute for Mathematics and its Applications, Minneapolis, MN Image Processing and Analysis Symposium	2004
University of Minnesota, Minneapolis, MN Vision Sciences Colloquium	2002

# Press

Press Coverage of Research (abridged list)  
Scientific American; ABC News (Boston, Channel 5); Boston Globe; New York Times (Freakonomics); Discover Magazine; Men's Health; Reader's Digest; BPS Research Digest; Life Hacker; Mind Hacks

# Conferences

Several Oral and Poster Presentations  
List available upon request

# References

Available upon request